



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/705,792	11/06/2000	Toshiaki Kashiwara	Q61526	6031

7590 06/12/2002  
Sughrue Mion Zinn MacPeak & Seas  
2100 Pennsylvania Ave NW  
Washington, DC 20037

EXAMINER

TAMAI, KARL I

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 06/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/705,792

Applicant(s)

KASHIHARA ET AL.

Examiner

Tamali E. Kari

Art Unit

2834

*ME*

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 11-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s): \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Specification*

1. The new title "VEHICLE AC GENERATOR WITH RECTIFIER DIODE PACKAGE DISPOSED BETWEEN THE COOLING PLATES" has been entered into the file wrapper. The requirement for a new title is withdrawn.
2. The objection to the abstract is withdrawn.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 5, 6, 11, 13, 15-17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano (JP 05-176539) and Gautier (US 5,982,062). Kawano teaches an AC generator having a casing, rotor, stator, and rectifier. The rectifier with a diode package 5a, 5b between the cooling plates 1, 4. The diode package having four plus side diodes 5a, four minus side diodes, and an AC input terminal 3. The diodes having bases 50 inserted in the cooling plates and AC terminal. The diode package having the diodes embedded in an insulating resin 8 with the AC terminal 3 extending from the resin to form a one piece construction. The AC terminal having a bent, joint structure for connecting the stator coil at 6, 7. Figure 23 shows the diodes are positioned in the outer diameter portion of the fan. Kawano teaches every aspect of the invention except the metal base plates for the

diodes with cooling fins. Gautier teaches copper base plates for the diodes to facilitate assembly of the rectifier with cooling fins. Gautier teaches the bases are knurled and pressed into the cooling plates. Gautier teaches the face of the base connected to the diode being larger than the anode/cathode of the diode. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the generator of Kawano with the diodes soldered to copper bases which are press fit into heat plates to facilitate manufacturing of the alternator.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano (JP 05-176539) and Gautier (US 5,982,062), in further view of Einthoven (US 5,950,068). Kawano and Gautier teach every aspect of the invention except the mesa diffusion element made using n-silicon and the dimension of the base, cathode, and anode. Einthoven teaches a n-silicon mesa diffusion diode for a rectifier. The rectifier having a truncated shape which inherently provides a smaller cathode than anode. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the generator of Kawano and Gautier with the diodes of Einthoven to provide an rectifier with improved breakdown voltage.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano (JP 05-176539) and Gautier (US 5,982,062), in further view of Ragaly (US 4,303,935). Kawano and Gautier teach every aspect of the invention except the face of the AC terminal and base plates is the same or larger than the face of the diodes. It would have been obvious to a person of ordinary skill in the art at the time of the invention to

construct the generator of Kawano and Gautier with the face of the AC terminal and base plates is the same or larger than the face of the diodes secure the diodes to the terminal/bases by soldering, as taught by Ragaly.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano (JP 05-176539) and Gautier (US 5,982,062), in further view of Mori et al.(Mori) (US 5,8728,564). Kawano and Gautier teach every aspect of the invention except the junction between the base/cooling plate larger than the junction between the base/diode. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the generator of Kawano and Gautier with the junction between the base/cooling plate larger than the junction between the base/diode, as in Mori, to provide good seating between the base and the cooling plate.

8. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano (JP 05-176539) and Gautier (US 5,982,062), in further view of Abadia et al.(Abadia)(US 5,883,450). Kawano and Gautier teach every aspect of the invention except the bases are soldered into the cooling plates. Abadia teaches the equivalence of the bases of the diodes being press fit, welded, or soldered to the cooling plates. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the generator of Kawano and Gautier with the bases solder to the cooling plates to provide a more secure mechanical connection, and because it choosing between know equivalents requires only routine skill in the art, as shown by Abadia soldering an press fitting are equivalent connections in the rectifier art.

9. Claims 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano (JP 05-176539) and Gautier (US 5,982,062), in further view of Deverall et al. (Deverall) (US 5,451,823). Kawano and Gautier teach every aspect of the invention except the cooling plates extending radially inward with a large number of cooling holes. Deverall teaches (figure 10) the cooling plates extending inward with a large number of cooling holes (410, 410, and 412). It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the generator of Kawano and Gautier with the holes in the cooling plates because Deverall teaches aligned ventilators to cool the plates 200 and 500.

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano (JP 05-176539) and Gautier (US 5,982,062), in further view of Yoshinaga et al. (Yoshinaga) (US 5,886,403). Kawano and Gautier teach every aspect of the invention except the resin having inorganic calcined product. Yoshinaga teaches that the resin includes inorganic silica or alumina but not necessarily Al<sub>2</sub>O<sub>3</sub> or SiO<sub>2</sub> (calcined). It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the generator of Kawano and Gautier with the resin having inorganic particles to provide suitable internal pressure as taught by Yoshinaga, and with the particle being Al<sub>2</sub>O<sub>3</sub> or SiO<sub>2</sub> because they are known insulators in the rectifier art and Yoshinaga suggests the particles are alumina or silica.

***Response to Arguments***

11. Applicant's arguments filed 4/4/02 have been fully considered but they are not persuasive. The Applicant's arguments that "the end face of the base is not joined to the principle plane of the radiation fin" because the base of the diode is within the radiation fin not joined to the principle plane is not persuasive. This argument is not persuasive because the hole within which the base is connected to the radiation fin is within the principle plane and therefore reads on the applicant's claimed limitation. The examiner notes that the Applicant has not claimed the axial end face of the base, but mere the end face, which could be axial or radial. The rejection is proper and maintained.

***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2834

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (703) 305-7066.

The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Nestor Ramirez, can be reached at (703) 308-1371. The facsimile number for the Group is (703) 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Karl I Tamai  
PRIMARY PATENT EXAMINER  
June 10, 2002

  
Karl I. Tamai  
Primary Patent Examiner  
June 10, 2002